

# BS in Statistics: Biostatistics (695233) MAP Sheet

Physical and Mathematical Sciences, Statistics

For students entering the degree program during the 2021-2022 curricular year.



University Core and Graduation Requirements				Suggested Sequence of Courses			
<b>University Core Requirements:</b>							
<b>Requirements</b>	<b>#Classes</b>	<b>Hours</b>	<b>Classes</b>				
<b>Religion Cornerstones</b>							
Teachings and Doctrine of The Book of Mormon	1	2.0	from approved list				
Jesus Christ and the Everlasting Gospel	1	2.0	from approved list				
Foundations of the Restoration	1	2.0	REL C 225				
The Eternal Family	1	2.0	from approved list				
<b>The Individual and Society</b>							
American Heritage	1-2	3-6.0	from approved list				
Global and Cultural Awareness	1	3.0	from approved list				
<b>Skills</b>							
First Year Writing	1	3.0	from approved list				
Advanced Written and Oral Communications	1	3.0	from approved list				
Quantitative Reasoning	1	4.0	MATH 112*				
Languages of Learning (Math or Language)	1	4.0	MATH 112*				
<b>Arts, Letters, and Sciences</b>							
Civilization 1	1	3.0	from approved list				
Civilization 2	1	3.0	from approved list				
Arts	1	3.0	from approved list				
Letters	1	3.0	from approved list				
Biological Science	1	3.0	PDBIO 120* recommended				
Physical Science	1-2	3-7.0	from approved list				
Social Science	1	3.0	from approved list				
<b>Core Enrichment: Electives</b>							
Religion Electives	3-4	6.0	from approved list				
Open Electives	Variable	Variable	personal choice				
*THESE CLASSES FILL BOTH UNIVERSITY CORE AND PROGRAM REQUIREMENTS (9 hours overlap)							
<b>Graduation Requirements:</b>							
Minimum residence hours required		30.0					
Minimum hours needed to graduate		120.0					

## FRESHMAN YEAR

### 1st Semester

First Year Writing	3.0
MATH 112* (FWSpSu)	4.0
STAT 121	3.0
STAT 130	0.5
Biological Science	3.0
Religion Cornerstone course	2.0
<b>Total Hours</b>	<b>15.5</b>

### 2nd Semester

American Heritage	3.0
MATH 113 (FWSpSu)	4.0
STAT 230	3.0
Religion Cornerstone course	2.0
Physical Science	3.0
<b>Total Hours</b>	<b>15.0</b>

## SOPHOMORE YEAR

### 3rd Semester

MATH 213	2.0
MATH 215	1.0
STAT 250	3.0
Global and Cultural Awareness	3.0
Civilization 1	3.0
Religion Cornerstone course	2.0
<b>Total Hours</b>	<b>14.0</b>

### 4th Semester

MATH 314 (FWSpSu)	3.0
STAT 240	3.0
STAT 330	3.0
Religion Cornerstone course	2.0
Civilization 2	3.0
<b>Total Hours</b>	<b>14.0</b>

## JUNIOR YEAR

### 5th Semester

Requirement 7 Elective #1	3.0
Requirement 4 Elective #1	1.5
Requirement 4 Elective #2	1.5
STAT 340	3.0
Advanced Written and Oral Communication	3.0
Religion elective	2.0
Open Electives	2.0
<b>Total Hours</b>	<b>14.0</b>

### 6th Semester

STAT 437	3.0
Requirement 8 Elective	3.0
Letters	3.0
Religion elective	2.0
Open Electives	4.0
<b>Total Hours</b>	<b>15.0</b>

Department recommendation: Internship during Spring/Summer

## SENIOR YEAR

### 7th Semester

Requirement 7 Elective #2	3.0
Requirement 9 Elective #1	3.0
Arts	3.0
Religion Elective	2.0
Open Electives	4.0
<b>Total Hours</b>	<b>15.0</b>

### 8th Semester

Requirement 9 Elective #2	3.0
Social Science	3.0
Open Electives	10.0
<b>Total Hours</b>	<b>16.0</b>

Note 1: Students should take STAT 130 the semester they declare themselves as a Statistics Major.

Note 2: The sequence of courses suggested may not fit the circumstances of every student. Students should contact their college advisement center for help in outlining an efficient schedule.

Note 3: Students are encouraged to complete an average of 15 credit hours each semester or 30 credit hours each year, including spring and/or summer terms, to reach the 120 credit minimum needed to graduate. Taking fewer credits substantially increases the number of semesters to graduate.

Note 4: Students must have the statistics core completed before their senior year in order to graduate within four years.

Note 5: STAT 538 isn't taught every year.

Note 6: Open elective credits can be classes of your choosing, classes for a minor, or credits that have already been earned through AP classes, transfer credits, etc.

**BS in Statistics: Biostatistics (695233)**  
**2021-2022 Program Requirements (53.5 Credit Hours)**

<b>No more than 3 hours of credit below C- is allowed in major courses.</b>			
<b>REQUIREMENT 1</b> Complete 2 courses		STAT 437 - Applications in Biostatistics	3.0
STAT 121 - Principles of Statistics	3.0	STAT 538 - Survival Analysis	3.0
STAT 130 - Introduction to the Department of Statistics	0.5	<b>REQUIREMENT 8</b> Complete 3.0 hours from the following course(s)	
<b>REQUIREMENT 2</b> Complete 5 courses		<b>NOTE: COURSES USED ANYWHERE ABOVE WILL NOT DOUBLE COUNT HERE.</b>	
<b>STATISTICS CORE COURSES:</b>		<b>NOTE: NO MORE THAN 3.0 CREDIT HOURS OF STAT 496R MAY BE COUNTED TOWARD THIS REQUIREMENT.</b>	
STAT 230 - Analysis of Variance	3.0	STAT 124 - SAS Base Programming Skills	1.5
STAT 240 - Probability and Inference 1	3.0	STAT 125 - Introduction to Operating Systems, Linux/Unix, and Shell Prog	1.5
STAT 250 - Applied R Programming	3.0	STAT 126 - Introduction to Python Programming	1.5
STAT 330 - Introduction to Regression	3.0	STAT 224 - Applied SAS Programming	1.5
STAT 340 - Probability and Inference 2	3.0	STAT 226 - SQL	1.5
<b>REQUIREMENT 3</b> Complete 4 courses		STAT 234 - Methods of Survey Sampling	3.0
<b>MATHEMATICAL FOUNDATION COURSES:</b>		STAT 251 - Introduction to Bayesian Statistics	3.0
*MATH 112 - Calculus 1	4.0	STAT 274 - Theory of Interest	3.0
MATH 113 - Calculus 2	4.0	STAT 377 - Statistical Models for Financial Economics	3.0
MATH 213 - Elementary Linear Algebra	2.0	STAT 381 - Statistical Computing	3.0
MATH 215 - Computational Linear Algebra	1.0	STAT 420 - Big Data Science 1	3.0
<b>REQUIREMENT 4</b> Complete 3.0 hours from the following course(s)		STAT 421 - Big Data Science 2	3.0
STAT 124 - SAS Base Programming Skills	1.5	STAT 426 - Data Science Methods and Applications in Statistics	3.0
STAT 125 - Introduction to Operating Systems, Linux/Unix, and Shell Prog	1.5	STAT 435 - Nonparametric Statistical Methods	3.0
STAT 126 - Introduction to Python Programming	1.5	STAT 437 - Applications in Biostatistics	3.0
STAT 224 - Applied SAS Programming	1.5	STAT 451 - Applied Bayesian Statistics	3.0
STAT 226 - SQL	1.5	STAT 466 - Introduction to Reliability	3.0
<b>REQUIREMENT 5</b> Complete 1 course		STAT 469 - Analysis of Correlated Data	3.0
MATH 314 - Calculus of Several Variables	3.0	STAT 495R - Special Topics in Statistics	3.0v
<b>REQUIREMENT 6</b> Complete 3.0 hours from the following course(s)		<i>You may take up to 3 credit hours.</i>	
STAT 437 - Applications in Biostatistics	3.0	STAT 531 - Experimental Design	3.0
STAT 538 - Survival Analysis	3.0	STAT 538 - Survival Analysis	3.0
<b>REQUIREMENT 7</b> Complete 6.0 hours from the following course(s)		<b>REQUIREMENT 9</b> Complete 6.0 hours from the following course(s)	
<b>NOTE: IF TAKEN ABOVE, STAT 437 AND 538 WILL NOT DOUBLE COUNT HERE.</b>		<b>NOTE: COURSES USED ANYWHERE ABOVE WILL NOT DOUBLE COUNT HERE.</b>	
BIO 350 - Ecology	3.0	<b>NOTE: NO MORE THAN 3.0 CREDIT HOURS OF STAT 496R MAY BE COUNTED TOWARD THIS REQUIREMENT. NOTE: IT IS STRONGLY RECOMMENDED THAT STUDENTS INTERESTED IN GRADUATE STUDY IN BIOSTATISTICS COMPLETE MATH 341 AND 342.</b>	
CELL 120 - Science of Biology	3.0	C S 142 - Introduction to Computer Programming	3.0
CELL 305 - Human Physiology	4.0	HLTH 345 - Principles of Epidemiology	3.0
CHEM 105 - General College Chemistry 1 with Lab (Integrated)	4.0	MATH 341 - Theory of Analysis 1	3.0
CHEM 111 - Principles of Chemistry 1	4.0	MATH 342 - Theory of Analysis 2	3.0
HLTH 345 - Principles of Epidemiology	3.0	STAT 124 - SAS Base Programming Skills	1.5
MMBIO 240 - Molecular Biology	3.0	STAT 125 - Introduction to Operating Systems, Linux/Unix, and Shell Prog	1.5
PWS 340 - Genetics	3.0		
		STAT 126 - Introduction to Python Programming	1.5
		STAT 224 - Applied SAS Programming	1.5
		STAT 226 - SQL	1.5
		STAT 234 - Methods of Survey Sampling	3.0
		STAT 251 - Introduction to Bayesian Statistics	3.0
		STAT 274 - Theory of Interest	3.0
		STAT 377 - Statistical Models for Financial Economics	3.0
		STAT 381 - Statistical Computing	3.0
		STAT 420 - Big Data Science 1	3.0
		STAT 421 - Big Data Science 2	3.0
		STAT 426 - Data Science Methods and Applications in Statistics	3.0
		STAT 435 - Nonparametric Statistical Methods	3.0
		STAT 437 - Applications in Biostatistics	3.0
		STAT 451 - Applied Bayesian Statistics	3.0
		STAT 466 - Introduction to Reliability	3.0
		STAT 469 - Analysis of Correlated Data	3.0
		STAT 495R - Special Topics in Statistics	3.0v
		STAT 496R - Academic Internship: Statistics	9.0v
		STAT 497R - Introduction to Statistical Research	3.0v
		STAT 531 - Experimental Design	3.0
		STAT 538 - Survival Analysis	3.0
		<b>THE DISCIPLINE:</b>	
		Statisticians apply sophisticated methods to increasingly massive data sets to discover insights into important business, government, and health policy questions. The curriculum and degrees offered through the Department of Statistics are designed to equip students with decision-making skills for careers as professional statisticians in industrial organizations, government agencies, insurance companies, pharmaceutical companies, universities, and research institutes.	
		The Biostatistics emphasis prepares students to engage in work to advance public health, biology, and medicine. It prepares students for graduate programs in statistics, biostatistics, epidemiology, public health, bioinformatics, and for health sciences professional programs. The Biostatistics emphasis includes the mathematics courses required for graduate study in statistics and biostatistics	

## BS in Statistics: Biostatistics (695233)

2021-2022

together with a selection of biology and chemistry courses.

### CAREER OPPORTUNITIES:

The increase of big data and analytics in personalized medicine, genomics, and bioinformatics is creating new challenges and opportunities for biostatisticians. Students with undergraduate degrees in biostatistics are well-prepared to apply for graduate programs in statistics and biostatistics but they also stand out as applicants to medical and dental schools and residencies. Statistical training prepares these students to take part in basic and clinical research during medical or dental school and residency.

### CERTIFICATION:

**SAS Certified Base Programmer and SAS Certified Advanced Programmer.** Students can take the SAS Certification exams after completing Stat 124 and 224. Information and exam registration is available at [support.sas.com/certify/creds/index.html](https://support.sas.com/certify/creds/index.html).

**SAS/BYU Applied Statistics and Advanced SAS Programming Certificate.** Students who earn a B or higher in the applied and computing core classes (Stat 124, 224, 230, 330, 381) are eligible to receive a certificate jointly issued by SAS and BYU which can be listed on a resume. More information is available at <https://statistics.byu.edu/content/sas-certificate-opportunities>.

### INTERNSHIPS:

**Internships.** The National Institutes of Health support a Summer Institute for Training in Biostatistics at nine university biostatistics programs. Program/application information is found at <https://www.nhlbi.nih.gov/node-general/summer-institute-biostatistics>.

### MAP DISCLAIMER

While every reasonable effort is made to ensure accuracy, there are some student populations that could have exceptions to listed requirements. Please refer to the university catalog and your college

advisement center/department for complete guidelines.

### DEPARTMENT INFORMATION

#### Department of Statistics

Brigham Young University

2152 WVB

Provo, UT 84602

Telephone: (801) 422-4505

#### FACULTY ADVISOR:

Del T. Scott

2152B WVB

Brigham Young University, Provo, UT 84602

Telephone: (801) 422-7054

### ADVISEMENT CENTER INFORMATION

FOR UNIVERSITY CORE OR PROGRAM QUESTIONS, CONTACT THE ADVISEMENT CENTER.

#### Physical and Mathematical Sciences College Advisement Center

Brigham Young University

N-181 ESC

Provo, UT 84602

Telephone: (801) 422-2674